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ABSTRACT

This paper contrasts two perspectives for evaluating educational programs: (1) a growth curve model of personal development in the sociocultural context; and (2) a narrowing staircase model of educational success. According to the first perspective, development occurs along personal, social, and cognitive dimensions, and arises from the individual's exploratory interaction with a context structured by enduring cultural resources that are organized in layers. The local school is one of many such resources encountered by the individual in his or her life-journey. As to the second perspective, within the orthodoxy of Institutionalized Public Basic Schooling (IPBS) in Zambia, development is conceived as a cumulative process of cognitive empowerment that is imparted through extractive alienation of the individual from the culture and community or origin. The paper maintains that education in Zambia will achieve its goals of personal and social improvement only if it conforms with the articulated quality criteria. Informal education in many parts of Africa includes legitimate participation in subsistence activities, narrative exposition of indigenous wisdom, and co-constructive play with peers. Each of these forms of practice, the paper notes, meet some of the quality educational criteria that are generally lacking from IPBS. The paper then describes two educational innovations in terms of their adequacy according the articulated criteria: (1) community-based, individual program plans for children with developmental disabilities; and (2) the use of growth-charts and child health monitoring to link basic science education with primary health care. (Contains 49 references.) (Author)

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Educational alternatives to schooling in Zambia

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"***Basic education for the modern world: alternatives to Western cultural hegemony***"
(Co-convenors: Robert Serpell, Bame Nsamenang).

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Outline

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3. Traditional educational practices in Africa

- legitimate participation in subsistence activities
- narrative exposition of indigenous wisdom
- co-constructive play with peers

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4. Innovative programs

- Community-based, individual program plans for children with developmental disabilities

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Abstract

A contrast is drawn between two different perspectives for evaluating educational provision: (1) a growth curve of personal development in sociocultural context, and (2) a narrowing staircase model of educational success. According to the first perspective, development occurs along personal, social and cognitive dimensions, and arises from the individual's exploratory interaction with a context structured by enduring cultural resources that are organized in layers. The local school is one of many such resources the individual may encounter in the course of his or her life-journey. Within the orthodoxy of Institutionalized Public Basic Schooling (IPBS) development is conceived as a cumulative process of cognitive empowerment that is imparted through extractive alienation of the individual from her culture and community of origin. Education will only achieve its purported goals of personal and social improvement if it conforms with certain quality criteria. A list of such criteria is articulated. Informal educational traditions in many parts of Africa include legitimate participation in subsistence activities, narrative exposition of indigenous wisdom, and co-constructive play with peers. Each of these forms of practice meets some of the quality criteria for education that are generally lacking from IPBS. Two innovative types of program are described in terms of their adequacy by these criteria: community-based, individual program plans for children with developmental disabilities; and use of growth-charts and child health monitoring to link basic science education with primary health care.

Institutionalised Public Basic Schooling in contemporary Zambia is almost exclusively modelled on a Western paradigm that was exported by European missionaries in the 19th century, institutionalized by the colonial administration, and only superficially adapted by the national government after political independence was achieved in 1964. Massive expansion of primary school enrolment in the 1960s and 70s led to the accentuation of a competitive orientation, in which an individual's academic success is defined in terms of extraction from the local community and the indigenous culture, into a privileged stratum of society (Serpell, 1993a). People who continue to live in rural communities thus need to look elsewhere for a locally relevant and empowering education. In this paper, I begin by outlining a socioculturally contextualized conception of psychological development, and contrast it with the orthodox conception embodied in Institutionalised Public Basic Schooling (IPBS). In section 2, I articulate a set of quality criteria for basic education as a process designed to support and enhance personal development in sociocultural context. In section 3, I describe three aspects of indigenous African educational tradition that conform with several of these quality criteria. Finally, in section 4, I describe two innovative types of educational program that meet most of the criteria, and seem to me to have greater potential for the local empowerment of rural children and their communities than the prevailing orthodoxy of IPBS.

1. The growth curve of personal development

The psychological development of an individual involves growth along several dimensions, including social responsibility, personal identity, and skills, knowledge and understanding. The developmental process arises from the individual's exploratory interaction with a physical and social context. The context is structured by a set of historically evolving cultural resources, including a particular language and technology as well as particular political and economic structures.

Insert Figure 1 About Here

The schema presented in Figure 1 (Serpell, 1995b) is based on an analogy with the "Growth Chart", also known as "the Road to Health", which is printed on health record cards issued to the parents of children "Under 5" by health services all over the world (Morley & Woodland, 1979). Unlike the much publicized "bell curve", whose shape is entirely devoid of developmental content (arising from the subsidiary topic of statistical distribution), the shape of the "growth curve" carries two important metaphorical connotations: maturation and directionality. The figure thus shows that each of several strands of human functioning matures as a function of time, but at different rates, and with different sensitive periods for the impact of contextual influences. It also shows

that an individual's "life-journey" (Serpell, 1993a) plots a course within the framework of a set of cultural resources that are layered, and that endure throughout the individual's life.

The interaction between context and development has been theoretically conceptualized in recent decades in several, related ways (Serpell (1993b). Context has been characterized as a set of nested and overlapping social systems (Bronfenbrenner, 1979), and as a mutually interdependent system of cultural practices, artifacts, and meanings (Scribner & Cole, 1981; Shweder, 1990). The values attached to various indicators of an individual's development can thus be understood as reflecting his or her adaptation to the demands of an ecologically, socially, and culturally defined developmental niche (Super and Harkness, 1986; Gallimore et al., 1989). The niche has several inter-related components: a restricted range of physical and social settings; a particular set of child-rearing practices; and a system of meanings. This meaning-system informs a cultural model (or ethnotheory) of child development and socialization (D'Andrade, 1984; Harkness & Super, 1992; Serpell, 1993a, Chapter 2), shared among those responsible for the upbringing of children in a given sociocultural group. Thus, "the cultural organization of context includes systematic patterns of social relationships, of recurrent activities, and of meanings. Over the course of their socialization, children gradually appropriate this complex system, becoming part of it, and by the same token coming to regard it as their own" (Serpell & Boykin, 1994, 400).

2. Quality criteria for basic education

Most political leaders and social planners of Third World nations in the 20th century have explicitly rejected the hegemonistic ideas of early Western missionaries and colonial administrators. But the project of `universal primary education' has captured their imagination as a major contribution to national development. Indeed, the World Declaration on Education For All, formulated at the international conference in Jomtien (1990) and endorsed by representatives of 155 governments, explicitly endorses the premise that "education is an indispensable key to, though not a sufficient condition for, personal and social improvement". If schools are to contribute to such developments rather than hinder them, attention to the quality of the education that they provide is also indispensable (Hawes & Stephens, 1990).

In the second half of the twentieth century, an increasingly standardized model of institutionalized public schooling (IPBS) has begun to emerge across many parts of the world (Serpell & Hatano, in press). In this model, schooling is organized as a sequence of tiers, with a primary, or basic, program of instruction designed to afford opportunities for the foundational acquisition of basic literacy skills, followed by a secondary program designed to build on that foundation while introducing students to various domains of cultural knowledge, such as the natural sciences, humanities and social studies.

Superimposed on this two-tier conceptualization of literacy, education and schooling, and ultimately serving to legitimate it, we find a set of assumptions regarding the appropriate stages of human development for enrolling students in each successive phase: primary schooling is prescribed for children between the initial mastery of linguistic communication and the onset of puberty, whereas secondary education is reserved for the period of adolescence, and tertiary education for young adults. Preschool education is principally designed to prepare children for primary schooling, and is reserved for young children below the age prescribed for initial enrolment in primary schools.

This congruence of developmental stages with types of educational provision has come to appear natural. Indeed, it informs the "paradigmatic" conception of the relationship between basic education in schools and parenting as based on a consensual division of responsibilities. According to some analysts the trend towards international acceptance of this paradigm represents a convergence of wisdom based on experience (Kagitcibasi, 1996). In my view, however, this model has taken on board unquestioningly a great deal of cultural baggage accumulated by the Western paradigm in the course of its unique historical evolution, much of which is extrinsic to the basic functions of pedagogy.

"The gradation of the curriculum into a sequence of steps each of which must be mastered before the student may embark on the next ... has become a crucial tenet of modern educational orthodoxy... Projection of this curricular gradation onto teachers' and parents' expectations of children at different ages has since become a Western cultural theme of great importance, influencing both the conception of education and that of child development. On the one hand, it serves to legitimate the organization of knowledge into a hierarchy of elements best taught and learned sequentially, working up from the basics to higher and advanced stages. And on the other hand, it has come to inform the notion that a child's maturation is incomplete in the absence of specifiable learning experiences which follow a natural progression in the school curriculum.

"The endurance of this age-by-grade matching as an integral feature of public education around the world underpins the metaphor of educational progress as climbing a staircase: a unilinear sequence of somewhat arduous movements along a predetermined path with a known set of discrete intervals and a specific, exalted destination" (Serpell, 1995a, 25-27).

Insert Figure 2 About Here

The schema presented in Figure 2 (Serpell, 1995b) is based both on the staircase metaphor, which Aries (1962) has shown was widely used in medieval European iconography to represent the "ages of man", and on the more contemporary icon of Western social science and educational planning: the demographic pyramid. In this vertically ordered image, children develop by climbing up from lower primary to upper primary grades, and still further by gaining admission to secondary (or high) school, and eventually to higher education, in which they can qualify for the credentials to enter the higher echelons of society. The staircase narrows toward the top, so that fewer and fewer children make it into the next grade. (The top section of the diagram has been expanded to allow room for the words needed to describe the various specialized disciplines that are held to tailor education to the demands of the highest levels of professional responsibility.) Meanwhile, those who fail to get a foothold on the next step of this narrowing staircase of cumulative cognitive empowerment, drop out of the system and fall down into the lower classes of society.

Logically implicit in this conception of educational provision is "an extractive definition of success" (Serpell, 1993a). Children are expected to leave behind them their community of origin as they progress up and out into a different sphere in which they will have access to superior cultural resources. Unlike the conceptualization represented in Figure 1, where macro-societal resources on an international, national, provincial, or district plane are filtered through local level structures such as the family and the neighborhood school, the dominant orthodoxy tends to regard Institutionalized Public Basic Schooling as separate from and inferior to the cultural institutions of the high culture, and - for most children - as separate from but superior to the cultural resources of the home. In recognition of the problem of cognitive integration that this poses for the developing child, administrators and curriculum developers have addressed in a number of different ways the challenge of building connections between the worlds of home and school (cf. Thompson, Mixon & Serpell, 1996).

The contrast between the two conceptions of human development that I have schematized in Figures 1 and 2 illustrates the degree to which the philanthropic and socially progressive project of expanding the provision of public schooling has been systematically distorted. Instead of ensuring that most children benefit from support for their personal development, the expansion of institutionalized provision has ensured that while small numbers of children thrive on the support that is offered, much larger numbers experience failure in the system, and are stigmatized as developmentally incomplete. The various types of educational activity to be discussed in the final section of this paper attach high priority to the linkage of curriculum content with students' ongoing lives in the local community. As a result, each of them defines success in more intrinsic, and less extractive terms than is characteristic of the standard model of Institutionalised Public Basic Schooling (IPBS), and they are often

administered partly or completely outside that framework.

Figure 3 (Serpell, 1995b) summarizes nine pedagogical characteristics that should be central to the design of basic education according to the contextualized theory of personal development outlined in section 1. In practice, however, they tend to be largely neglected in IPBS. It is probably no accident that some of the most effective applications of these general principles are found in the context of educational activities that are regarded as "special" or residual by the administrators of IPBS, since the latter have seldom looked to indigenous cultural forms for their inspiration. I shall argue in the next section that, were they to do so, they would find readily accessible examples of educational practices that meet these quality criteria.

Insert Figure 3 About Here

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3. Traditional educational resources in Africa

Educational traditions in Africa have often tended to be relatively informal, at least until children reach the age of puberty (Erny 1972). This does not, however, mean that they are devoid of pedagogical efficacy.Three widely prevalent practices in indigenous African education, each of which incorporates several of the principles enunciated in Figure 3, are as follows:

- legitimate participation in subsistence activities
- narrative exposition of indigenous wisdom.
- co-constructive play with peers

In many subsistence economies, both in Africa and elsewhere in the Third World, children are expected to participate from an early age in activities that contribute functionally to the survival and/or well-being of their family. The cognitive challenges with which children are presented in such contexts are authentic tasks that elicit high levels of intrinsic motivation to learn (see Fig.3, item d). Unlike many of the factitious tasks that dominate the curriculum of IPBS, the skills required to perform these tasks adequately are presented as integrally connected with social and moral responsibility (item e). Learning is integrated with economic productivity (item h), and the learner is incorporated as a legitimate participant within a social system that displays the full range of desirable outcomes of the learning process (item i) (cf. Fortes, 1938), so that children are left in no doubt as to the ecological validity (item b) of the activity in which they are engaged.

The seminal work of Rogoff & Lave (1984) on "everyday cognition" has given rise to two complementary lines of theorizing. Whereas Rogoff (1990) has characterized informal education as a form of "apprenticeship in thinking", with more competent adults providing the apprenticed child with guidance in his or her zone of proximal development (ZPD), Lave & Wenger (1991) have focused more on the collective organization of social practices and the opportunities that it affords for "legitimate peripheral participation". It is perhaps a reflection of middle-class Western cultural biases informing contemporary interpretations of Vygotsky's (1978) theorizing about the ZPD, that the concept of "guided participation" has so often been articulated in recent studies as involving explicit, instructional attention by adult experts to matching their input to the child's emergent cognitive competence. Yet such a programmatically tutorial attitude may not be essential to the developmental potential of engagement in socially organized, recurrent activities. Indeed, there may be a convergence between modern, Western educational practices (heavily influenced by Piaget's emphasis on the exploratory nature of cognitive development) and traditional African socialization practices in recognizing the importance of affording children opportunities to discover cultural principles through inference rather than always imparting them didactically.

In his contribution to this symposium, Bame Nsamenang underlined the educational function in African traditions of proverbs and story-telling. In these narrative genres, the exposition of indigenous wisdom is often timed to suggest obliquely an interpretation of recent or current events in the life of one or members of the audience to whom they are addressed. In order to learn from such structured inputs, the learner is invited to consider analogies, rather than passively confronted with them. As Heath (1983) and others have noted, such tangential indirectness is a well-known stylistic device in Western poetry, that has been somewhat underplayed in contemporary American schooling, in favor of a more prosaic form of rhetoric. Yet, according to Bruner (1986), this may be a powerful strategy for recruiting the imagination, and enabling active appropriation of cultural themes.

Nsamenang also noted the importance of "anticipatory socialization" as a dimension of African child-rearing and enculturation. Much of this takes place in the context of co-constructive play with peers, a context that Vygotsky (1978) recognized as well-suited to rehearsal by children of adult activities that are seldom legitimated in the contexts of Western traditional forms of schooling. In many African societies, it is much more likely that the child will experience individualized adjustment of the input to guide his or her participation in such multi-age-group play activities than when participating peripherally in subsistence economic activities with adults.

4. Innovative programs

In this concluding section, I wish to draw attention to two different types of innovative program in which the principles listed in Figure 3 that are so well instantiated in traditional African educational practices, and so rarely followed in the context of IPBS in Africa, are apparently followed in ways that are especially relevant as a preparation for life in the modern world.

Community-based, individual program plans for children with developmental disabilities.

The principle of individualizing instruction[1] within the student's zone of proximal development (ZPD) (Fig.3, item a) is assuredly relevant to everyone's education. But it has been especially valuable as a guide for the instruction of students with special needs, perhaps because a teacher's intuitions of how best to present a new task to a learner benefit most from careful observation of the student's behavior in those cases where the student is constrained by factors of which the teacher lacks first-hand experience, such as sensory, motor or cognitive impairment. The construction of an individual program plan (IPP) or individual educational program (IEP) begins with observation, analysis, and assessment of the individual's behavior in one or more tightly specified domains. Each domain is analyzed in terms of its task demands, and these two structured bodies of information (behavioral assessment and task analysis) are combined to prescribe a particular set of activities, often in a scheduled sequence, for promoting increases in the individual's proficiency in that domain. Behavioral assessment is repeated periodically in order to determine progress toward the stipulated goals of the program. If insufficient progress is found or if the student has achieved a criterial level of proficiency, new activities are prescribed, and the IPP thus evolves over time providing a sensitively adjusted guide to the individual's education.

Because most of the research that gave rise to this systematic approach was conducted in highly controlled laboratory settings, IPPs were at first conceived as techniques that could only be administered by professional experts. Concerns of ecological validity (Fig.3, item b) however led to increasing interest by researchers in ways of "exporting" the technology to naturally occurring settings in the everyday environment of children. This theoretical interest meshed with several social and economic and concerns of

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[1] Several other theoretical perspectives in the field of applied developmental psychology concur in advocating that the form and pace of instruction should ideally be adjusted to characteristics of the individual learner (including the behavior analytic tradition, neo-Piagetian and information-processing models).

policymakers. Studies of children raised in large institutions in the 1950s and 60s revealed some dysfunctional consequences of what had been conceived as a philanthropic enterprise, including socio-emotional inadequacy, institutional dependency, and social stigma. The deinstitutionalization movement that gained momentum in industrialized Western nations in the 1970s advocated placing children with special needs in the "least restrictive environment" compatible with attending to those needs. And in third world countries it became increasingly apparent in the same period that residential special schools established by Western aid agencies, whatever their technical benefits, were inappropriate as a general model for habilitation if only because their unit cost was vastly in excess of the resources available for services to this sector of the population in a nation with scarce economic resources. In short, special education administered by specialist teachers in specialized institutional settings was neither socially acceptable nor economically affordable.

A new policy framework was therefore proposed for delivering the benefits of the IPP technology to children with special needs in Third World countries, under the heading of community-based rehabilitation (CBR) (WHO 1980, 1983). The guiding principle of CBR is that whenever possible intervention designed to ameliorate the health, proficiency, and social integration of a person with a disability will be administered by members of their immediate family and community in the context of the client's everyday life in the local neighborhood. The principal role of professionals in this type of habilitation is to provide advice as a consultant, rather than direct, "hands-on" treatment, instruction, or care. This has led to an emphasis on "giving away skills" (Mittler & Serpell, 1985). The planning of individual programs used to be seen as an expert function, with family members as mere "implementers" of those plans. With the growth of self-advocacy and parent organizations, greater emphasis has been placed on establishing true partnerships between professionals and the families they advise (Mittler & McConachie, 1983) (cf. Fig.3, item c).

A fully articulated version of this educational model has been implemented in several rural areas of Zimbabwe under the auspices of ZIMCARE a national, non-governmental organization (Mariga & McConkey, 1987), and comparable, smaller-scale programs of home-based learning have been described in Kenya (Arnold, 1988) and Zambia (Nabuzoka, 1986) (cf. Serpell & Nabuzoka, 1991; Serpell, Mariga & Harvey, 1993). Thus, whereas the concept of special education has mainly been instantiated in highly selective, institutional settings in Africa, it has also given rise to a model of community-based outreach services that combine pedagogical responsiveness to individual needs with ecological validity in the definition of curriculum and a high level of parent-professional collaboration (Serpell, 1986).

Socially distributed cognition: linking basic education in science to primary health care through the use of growth-charts and child health monitoring.

I refer in this instance to an ongoing process of educational innovation in Zambia, taking place under the auspices of the Child-to-Child program that my colleague, Gertrude Mwape and I have recently begun to document (Serpell & Mwape, 1996; Mwape & Serpell, 1996). The program exemplifies particularly well three of the principles enunciated in Figure 3: acknowledgement of the socially distributed nature of cognition (item f); cultivation of technical skills in intimate conjunction with social and moral responsibility (item e); and use of appropriate technology (item g).

Several studies have drawn attention to the remarkable extent to which the cognitive work of literacy in everyday life is socially distributed (Scribner & Cole, 1981; Reder, 1987).The benefits of literacy to a community cannot be gauged by simple aggregation of individual competencies, since the cultural sharing of technology involves socially distributed cognition (Serpell, 1994). Literacy and mathematics, from this perspective, are cultural resources at the disposal of participants in various socially organized activities. Their technological characteristics are both constraining and empowering. The cognitive possibilities that they afford are mediated by co-constructive processes (Zukow, 1989).

The government policy of primary health care in Zambia defines as priority objectives of its Child Survival program the promotion of growth-monitoring, oral rehydration, breast-feeding and immunization ("GOBI", cf. Grant, 1984). A key resource of the program is the weight-monitoring growth chart (cf. Morley & Woodland, 1979) printed on child health record cards, which are kept at home by parents, many of whom have received an incomplete primary school education. The metaphor of "the road to health" encoded diagrammatically on these charts combines a number of powerful attributes: low-cost user-friendliness (a recurrent theme of Appropriate Technology); semiotic translucency (a valuable resource for cross-cultural communication - cf. Kiernan, 1985); demographic adaptability (guaranteeing transcultural relevance); and statistical calibration (giving it the quantitative sophistication required of a curricular topic in the field of modern science education).

The complex ways in which families in many African societies share the process of nurturance of young children among adolescent and pre-adolescent children have been discussed extensively in the literature (e.g. Rabain, 1979; Whittemore & Beverly, 1989; Harkness & Super, 1992; Nsamenang, 1992; Serpell, 1992). From a distributed cognition perspective, the goal of protecting infant health could be (and indeed sometimes is) achieved through collaboration by professional health personnel with mothers who can grasp the essential principles of the "road to health" diagram, without

expecting the latter to master the technicalities of calculating statistical norms or plotting graphs. Thus, various types of understanding may inform the ways in which different members of the community 'read' the chart, and yet those diverse understandings may converge sufficiently for the chart to serve as an effective shared resource for co-constructive problem-solving and action-planning.

As part of a recent curriculum development initiative in Africa, Gibbs and Mutunga (1991) have published a set of instructional modules in basic mathematics that focus on practical aspects of primary health care, including the monitoring of young children's weight. Working at a regular, government primary school in a small rural town of Zambia, two teachers, Paul Mumba and Clement Mumbo have applied this approach not only to the design of class assignments that require their students to plot growth charts from imaginary raw data, but also to outreach activities in which the students maintain weight charts for their younger siblings or other young children in their home neighborhood aged about 2-3 years - a critical phase for many rural Zambian children's development, because parents tend to stop bringing their children to the clinic for weighing at this age, shifting their attention to the care of the next sibling to be born. Such involvement in the care of a younger child has other potential educational value as an opportunity to cultivate nurturant responsibility - a moral quality highly valued in many African societies, but relatively neglected in the curriculum of most contemporary public school systems (Serpell, 1992, 1993a).

Cicirelli (1976, 100) identifies several dimensions of the developmentally supportive relationship that an older child may have with a younger one, in his discussion of "siblings teaching siblings": "peers can be models, reinforcers, caretakers, confidants, and pace setters as well as teachers". In addition to these potential contributions to the development of the younger child, the role of nurturance can be of value to the development of the older child in a number of ways. The task of instructing another less knowledgeable individual affords opportunities for cognitive restructuring in the service of presentational clarity and integration with other parts of the cognitive repertoire, that give rise to the dictum "there is no better way to achieve understanding of a topic than trying to teach it to someone else." Furthermore, taking on the responsibility for the care and guidance of another person generates enhanced self-esteem and personal confidence.

Other dimensions of the Child-to-Child program that we have observed at this and several neighboring schools involve students in learning how to make at home an Oral Rehydration Solution for the treatment of diarrhea by mixing water, sugar and salt in the correct proportions, bringing plastic containers of clean water to school according to a duty roster in order to facilitate personal hygiene when using the school's pit latrines, and even conducting community surveys of child health and nutrition.

Children in this program are thus introduced to modern health science and technology through ecologically valid activities, focusing on authentic tasks that are intrinsically motivating. By participating in genuine preventive and ameliorative, primary health care practices, these children have multiple opportunities to appropriate technical knowledge while also contributing to the welfare of their families and home community, and thus growing not only in skills but also in social responsibility.

In our ongoing study, we are exploring parental perceptions of the program both in relation to their expectations of the public school system and in relation to their indigenous cultural values and socialization goals. Our preliminary findings suggest that most parents, despite widespread emphasis in the mainstream of Zambian schooling on the promotion of purely cognitive development, welcome this experimental foray by the Child-to-Child program into the domain of moral socialization, and perceive it as consistent with the strong positive value placed in the indigenous culture on the personal/social quality of ***ichikuku*** (nurturance).

The challenge of such findings, I believe, is similar to that expressed by Boykin, Hatano, and Nsamenang, in their contributions to this symposium, that basic education for the modern world should explore alternatives to Western cultural hegemony, seeking to incorporate within the curriculum values fundamental to the spirit of the national, regional or ethnic culture in which the priorities of public schooling should rightfully be determined.

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Figure 1

Complementary resources perspective on education for personal development

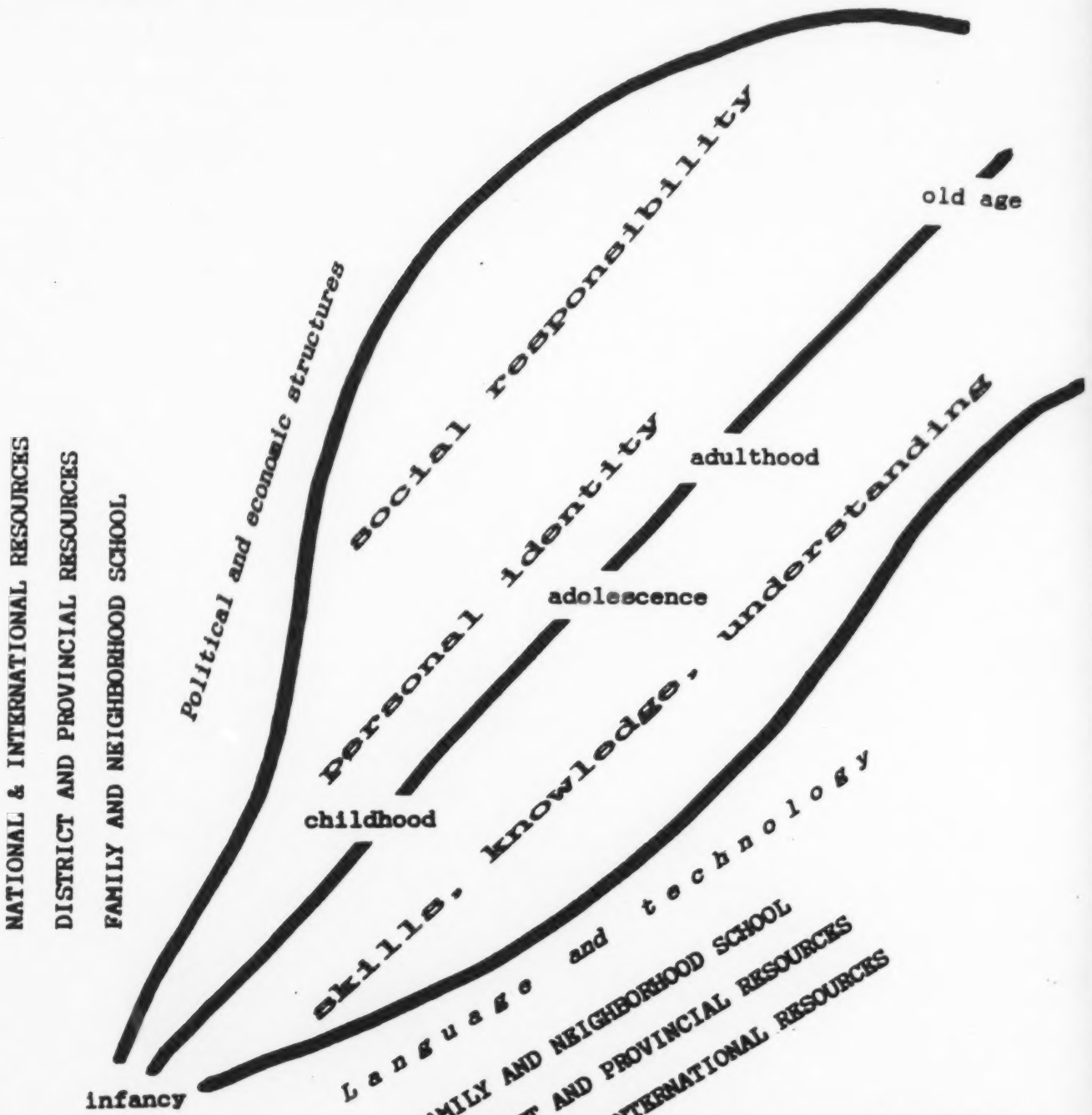

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Figure 2

Extractive recruitment model of schooling

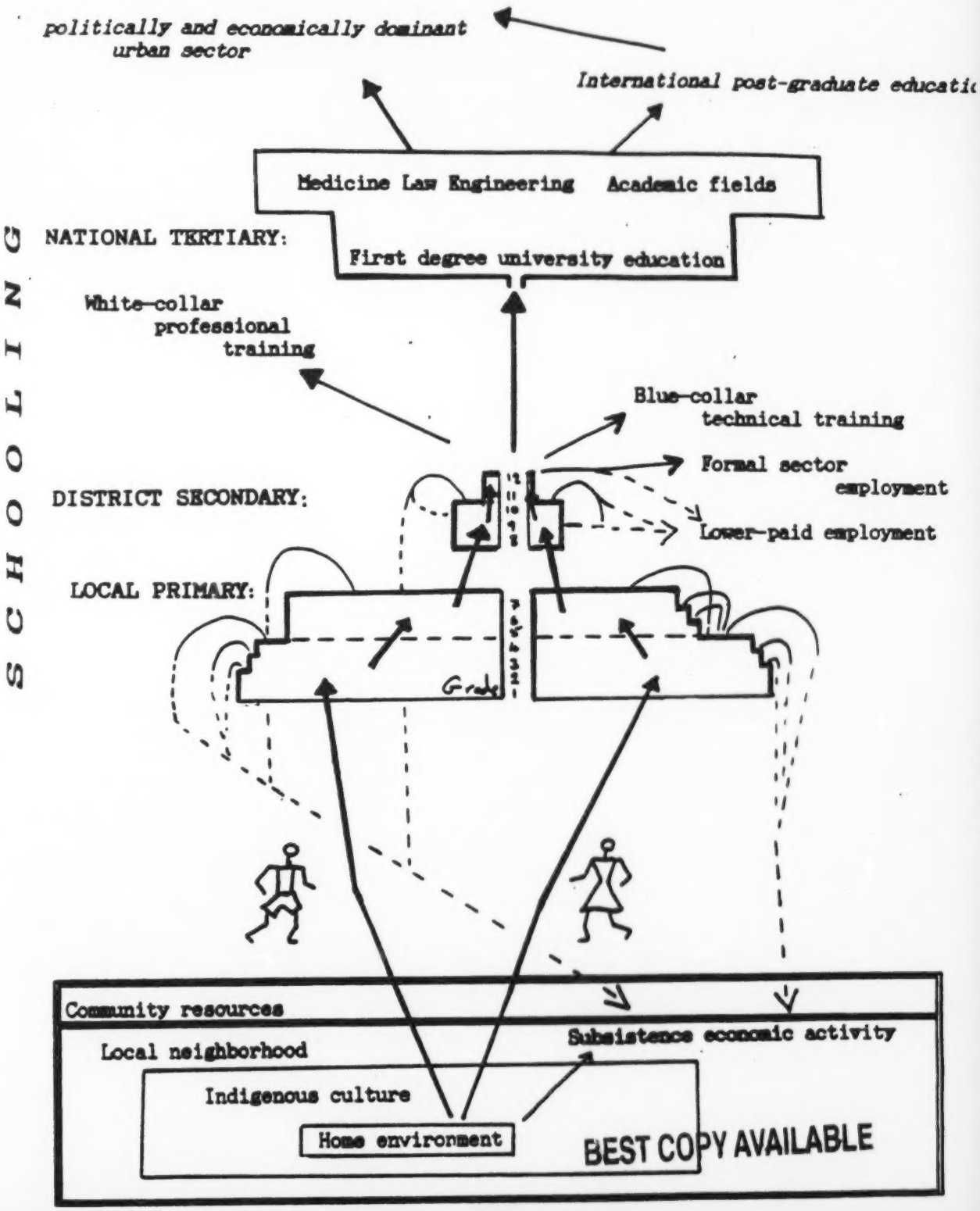

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Figure 3

Pedagogical characteristics of some educational activities excluded from the standard model of IPBS

(a) individualized instruction within the **student's zone of proximal development** (ZPD)

(b) emphasis on **ecological validity** in the definition of curricular tasks

(c) high premium on **parent-professional collaboration** for implementation of the educational program

(d) focus on **authentic tasks** that elicit high levels of **intrinsic motivation** to learn

(e) presentation of technical **skills as integrally connected with** social and moral **responsibility**

(f) explicit acknowledgement of the **socially distributed nature of cognition**

(g) use of **appropriate technology**

(h) integration of learning with **economic productivity**

(i) incorporation of the **learner as a legitimate participant within a social system** that displays the full range of desirable outcomes of the learning process.